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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/790,986	03/02/2004	Takeo Eguchi	09792909-5828	1289

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EXAMINER

DO, CHAT C

ART UNIT	PAPER NUMBER
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2193

MAIL DATE	DELIVERY MODE
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05/02/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/790,986

Applicant(s)

EGUCHI, TAKEO

Examiner

Chat C. Do

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03/02/04; 07/15/04; 12/28/05; 04/11/06.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>12/28/05; 04/11/06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. Figures 6-7 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

3. The abstract of the disclosure is objected to because the abstract is written more than 150 words in length. Correction is required. See MPEP § 608.01(b).
4. The disclosure is objected to because of the following informalities:

The applicant is advised to amend the title for a précised title of invention.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re claim 1, the limitation "high-order part extraction means...by the operation means" is mis-descriptive because the extraction means is done to perform extracting a high-order part of the rounded result, not rounding the result means extracting a high-order part. For examination purposes, the examiner considered the extract means as a means for extracting a high-order part of rounded result by selecting an upper portion the rounded result. Claims 5, 9, and 13 have the same rejection.

Thus, claim 2-4, 6-8, and 10-12 are also rejected for being dependent on the rejected base claims 1, 5, and 9 respectively.

Claim Rejections - 35 USC § 101

7. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

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8. Claims 5-8 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 5-8 cite a program for performing a predetermined operation in accordance with a mathematical algorithm. In order for claims to be statutory, claims must either include a practical/physical application or a concrete, useful, and tangible result. However, claims 5-8 cite a program, which are considered as software per se. Therefore, claims 5-8 are directed to non-statutory subject matter.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Agrawal et al. (U.S. 4,272,648).

Re claim 1, Agrawal et al. disclose in Figures 1-5 a signal processing apparatus (e.g. Figure 1) for receiving digital signals that are continuously related and input sequentially (e.g. after sampling and digitized by components 19 and 23 in Figure 1), performing a predetermined operation on each of sequentially input digital signals (e.g. Figures 3-5 as typical operations), and outputting a result of the operation (e.g. output of Figures 3-5 to the next operation), the signal processing apparatus (e.g. Figure 1) comprising: operation means for performing the predetermined operation on an input

digital signal (e.g. multiplication process as seen in Figure 3 prior reducing word length); high-order part extraction means for extracting a necessary high-order part by rounding off a result of the operation performed by the operation means (e.g. component 63 in Figure 3); difference calculation means for calculating the difference between the result of the operation performed by the operation means and the high-order part extracted by the high-order part extraction means (e.g. component 64 in Figure 3); and feedback means for adding, to a next input digital signal, the difference value calculated by the difference calculation means or a value obtained by performing a predetermined operation on the difference value calculated by the difference calculation means (e.g. feedback as seen in Figure 3 wherein the error is feedback to the adder 62 through delay element 65 to the next sample).

Re claim 2, Agrawal et al. further disclose in Figures 1-5 a second set of continuously-related digital signals is sequentially input after completion of inputting of a first set of continuously-related digital signals (e.g. next sample is fed continuously into the system), a difference value obtained as a result of the difference calculation performed (e.g. error signal obtained by adder 64), by the difference calculation means, on the last digital signal of the first set of digital signals or a value obtained by performing the predetermined operation on the difference value calculated by the difference means is reset to 0 or added with a particular value (e.g. most significant digital of error is either 0 or error signal from adder 64 in Figure 3), and the resultant value is added, via the feedback means, to the first digital signal of the second digital signals (e.g. by adder 62 in Figure 3).

Re claim 3, Agrawal et al. further disclose in Figures 1-5 feedback means adds, to the next input digital signal, a value obtained by multiplying the difference value calculated by the difference calculation means by a factor smaller than 1 (e.g. only the most significant digit of error signal $e(N)$, technically the error signal is scaled down by $N-1$ digits as seen in Figure 3).

Re claim 4, Agrawal et al. further disclose in Figures 1-5 a digital signal acquired by means of over sampling is input to the operation means (e.g. Figure 5).

Re claim 5, it is a program as software claim of claim 1. Thus, claim 5 is also rejected under the same rationale as cited in the rejection of rejected claim 1.

Re claim 6, it is a program as software claim of claim 2. Thus, claim 6 is also rejected under the same rationale as cited in the rejection of rejected claim 2.

Re claim 7, it is a program as software claim of claim 3. Thus, claim 7 is also rejected under the same rationale as cited in the rejection of rejected claim 3.

Re claim 8, it is a program as software claim of claim 4. Thus, claim 8 is also rejected under the same rationale as cited in the rejection of rejected claim 4.

Re claim 9, it is a medium claim of claim 1. Thus, claim 9 is also rejected under the same rationale as cited in the rejection of rejected claim 1.

Re claim 10, it is a medium claim of claim 2. Thus, claim 10 is also rejected under the same rationale as cited in the rejection of rejected claim 2.

Re claim 11, it is a medium claim of claim 3. Thus, claim 11 is also rejected under the same rationale as cited in the rejection of rejected claim 3.

Re claim 12, it is a medium claim of claim 4. Thus, claim 12 is also rejected under the same rationale as cited in the rejection of rejected claim 4.

Re claim 13, it is a method claim of claim 1. Thus, claim 13 is also rejected under the same rationale as cited in the rejection of rejected claim 1.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. U.S. Patent No. 7,035,892 to Denk et al. disclose an apparatus and method for reducing precision of data.
- b. U.S. Patent No. 6,978,289 to Matula discloses an apparatus and method for minimizing accumulated rounding errors in coefficient values in a lookup table for interpolating polynomials.
- c. U.S. Patent No. 6,493,738 to Yoshimi discloses an apparatus and method for rounding numerical values according to significant digits or rounding interval.
- d. U.S. Patent No. 6,014,683 to Katsuta discloses an arithmetic operation system for arithmetically operating a first operand having an actual point and a second operand having no actual point.
- e. U.S. Patent No. 5,951,625 to Duvanenko et al. disclose a interpolated lookup table circuit.
- f. U.S. Patent Publication No. 2002/0198918 to Steele, JR discloses a floating point unit for detecting and representing inexact computations without flags or traps.

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- g. U.S. Patent No. 6,314,442 to Suzuki discloses a floating-point arithmetic unit which specifies a least significant bit to be incremented.
- h. U.S. Patent No. 6,128,726 to LeComec discloses an accurate high speed digital signal processor.
- i. U.S. Patent No. 6,505,221 to Maschmann disclose a FIR filter utilizing programmable shifter.
- j. U.S. Patent Publication No. 2001/0025292 to Denk et al. disclose an apparatus and method for reducing precision of data.
- k. U.S. Patent No. 6,510,446 to Fukagawa discloses a floating point calculation method and unit efficiently representing floating point data as integer and semiconductor integrated circuit device provided with the same.
- l. U.S. Patent No. 6,148,317 to Riddle et al. disclose a method and apparatus for compressing signals in a fixed point format without introducing a bias.
- m. U.S. Patent No. 5,768,170 to Smith discloses a method and apparatus for performing microprocessor integer division operations using floating point hardware.
- n. U.S. Patent No. 5,128,887 to Smith et al. disclose a numerical accuracy indicator for rounded numeric value display method.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chat C. Do whose telephone number is (571) 272-3721. The examiner can normally be reached on M => F from 7:00 AM to 5:30 PM.

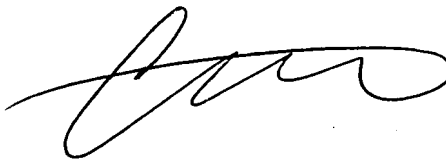
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chat C. Do
Examiner
Art Unit 2193

April 25, 2007

A handwritten signature in black ink, appearing to read 'Chat C. Do', with a stylized, flowing script.